

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claims 1-10 (Cancelled)

11. (Currently Amended) A process for producing ~~single-walled~~ single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a ~~catalyst~~ catalytic material, the catalytic particles effective in catalyzing the conversion of a carbon-containing gas into ~~single-walled~~ single-walled carbon nanotubes;

removing air from the catalytic particles by exposing the catalytic particles to a heated inert gas;

reducing the catalytic particles by exposing the catalytic particles to a heated reducing gas forming reduced catalytic particles;

and

catalytically forming ~~single-walled~~ single-walled carbon nanotubes by exposing the reduced catalytic particles to a carbon-containing gas for a duration of time and at a temperature

sufficient to cause catalytic production of ~~single-walled~~ single-walled carbon nanotubes thereby forming reacted catalytic particles bearing the ~~single-walled~~ single-walled carbon nanotubes.

12. (Currently Amended) The process of claim 11 wherein the ~~catalyst~~ catalytic material comprises cobalt and molybdenum.

13. (Previously Presented) The method process of claim 11 wherein the inert gas comprises a gas selected from the group consisting of He, Ar, and N<sub>2</sub>.

14. (Previously Presented) The method process of claim 11 wherein the carbon-containing gas comprises a gas selected from the group consisting of CO, CH<sub>4</sub>, C<sub>2</sub>H<sub>4</sub>, C<sub>2</sub>H<sub>2</sub>, or mixtures thereof.

15. (Previously Presented) The method process of claim 11 wherein the support material is selected from the group consisting of SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, MgO, ZrO<sub>2</sub>, zeolites, MCM-41, and Mg(Al)O.

16. (Currently Amended) The method process of claim 11 wherein the catalyst catalytic material comprises at least one of the metals selected from the group consisting of Co, Mo, Ni, Fe, W, or Nb.

17. (Currently Amended) The method process of claim 11 wherein the catalyst catalytic material comprises a Group VIII metal selected from the group consisting of Co, Ni, Ru, Rh, Pd, Ir, Fe, Pt, and mixtures thereof, and a Group VIb metal selected from the group consisting of Cr, Mo, W, and mixtures thereof ~~or~~ and/or a Group Vb metal selected from the group consisting of V, Nb and Ta, and mixtures thereof.

18. (Original) The process of claim 11 wherein the reaction temperature is about 700°C to about 1000°C.

19. (Original) The process of claim 11 wherein the reaction temperature is about 750°C to about 950°C.

Claims 20-21 (Cancelled)

22. (Currently Amended) The process of claim 11 wherein the carbon-containing gas comprises carbon monoxide, a saturated aliphatic hydrocarbon,

an unsaturated aliphatic hydrocarbon, an oxygenated hydrocarbon, an alcohol, and/or an aromatic hydrocarbon.

23. (Previously Presented) The process of claim 22 wherein the carbon-containing gas further comprises a diluent gas.

24. (Cancel)

25. (Currently Amended) A process for producing ~~single-walled~~ single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a ~~catalyst~~ catalytic material, the catalyst effective in catalyzing the conversion of a carbon-containing gas into carbon nanotubes;  
treating the catalytic particles with a reduction process;  
heating the catalytic particles to a reaction temperature; and  
catalytically forming ~~single-walled~~ single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the ~~single-walled~~ single-walled

carbon nanotubes thereby forming reacted catalytic particles bearing the ~~single-walled~~ single-walled carbon nanotubes.

26. (Currently Amended) The process of claim 25 wherein the ~~catalyst~~ catalytic material comprises cobalt and molybdenum.

27. (Previously Presented) The process of claim 25 wherein the step of heating the catalytic particles comprises exposing the catalytic particles to a heated inert gas.

28. (Previously Presented) The process of claim 25 further comprising the step of flushing the carbon-containing gas from the reacted catalytic particles.

29. (Previously Presented) The process of claim 25 further comprising the step of cooling the reacted catalytic particles.

30. (Currently Amended) The process of claim 25 further comprising the step of removing amorphous carbon from the reacted catalytic particles and treating the reacted catalytic particles to obtain the ~~single-walled~~ single-walled carbon nanotubes.

31. (Currently Amended) The process of claim 25 wherein the ~~catalyst~~ catalytic material is a metallic catalyst.

32. (Previously Presented) The process of claim 25 wherein the reaction temperature is about 700°C to about 1000°C.

33. (Previously Presented) The process of claim 25 wherein the reaction temperature is about 750°C to about 950°C.

34. (Currently Amended) The process of claim 25 wherein the carbon-containing gas comprises carbon monoxide, a saturated aliphatic hydrocarbon, an unsaturated aliphatic hydrocarbon, an oxygenated hydrocarbon, an alcohol, and/or an aromatic hydrocarbon.

35. (Previously Presented) The process of claim 25 wherein the carbon-containing gas further comprises a diluent gas.

36. (Currently Amended) The process of claim 25 comprising the additional step of treating the reacted catalytic particles to obtain the ~~single walled~~ single-walled carbon nanotubes.

Claims 37-62 (Cancel)

63. (New) A process for producing single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material comprising Co and Mo;

heating the catalytic particles to a reaction temperature wherein the reaction temperature is about 750°C to about 950°C; and

catalytically forming single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the single-walled carbon nanotubes thereby forming reacted catalytic particles bearing the single-walled carbon nanotubes.

64. (New) A process for producing single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material;  
treating the catalytic particles with a reduction process;  
heating the catalytic particles to a reaction temperature wherein the reaction temperature is about 750°C to about 950°C;  
and  
catalytically forming single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the single-walled carbon nanotubes thereby forming reacted catalytic particles bearing the single-walled carbon nanotubes.

65. (New) A process for producing single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material;  
heating the catalytic particles to a reaction temperature wherein the reaction temperature is about 750°C to about 950°C, and



wherein the catalytic particles are heated by exposing the catalytic particles to a heated inert gas; and  
catalytically forming single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the single-walled carbon nanotubes thereby forming reacted catalytic particles bearing the single-walled carbon nanotubes.

66. (New) A process for producing single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material;

heating the catalytic particles to a reaction temperature wherein the reaction temperature is about 750°C to about 950°C;

catalytically forming single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the single-walled carbon nanotubes

thereby forming reacted catalytic particles bearing the single-walled carbon nanotubes; and  
flushing the carbon-containing gas from the reacted catalytic particles.

67. (New) A process for producing single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material;

heating the catalytic particles to a reaction temperature wherein the reaction temperature is about 750°C to about 950°C;

catalytically forming single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the single-walled carbon nanotubes thereby forming reacted catalytic particles bearing the single-walled carbon nanotubes; and

removing amorphous carbon from the reacted catalytic particles to obtain the single-walled carbon nanotubes.

68. (New) A process for producing single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material;

heating the catalytic particles to a reaction temperature wherein the reaction temperature is about 750°C to about 950°C; and

catalytically forming single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the single-walled carbon nanotubes thereby forming reacted catalytic particles bearing the single-walled carbon nanotubes, wherein the carbon-containing gas further comprises a diluent gas.

69. (New) A process for producing single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material;

heating the catalytic particles to a reaction temperature wherein the reaction temperature is about 750°C to about 950°C; catalytically forming single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the single-walled carbon nanotubes thereby forming reacted catalytic particles bearing the single-walled carbon nanotubes; and treating the reacted catalytic particles to obtain the single-walled carbon nanotubes.

70. (New) A process for producing single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material comprising Co and Mo;

heating the catalytic particles to a reaction temperature; and catalytically forming single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the single-walled carbon nanotubes

thereby forming reacted catalytic particles bearing the single-walled carbon nanotubes, and wherein the carbon-containing gas comprises carbon monoxide, a saturated aliphatic hydrocarbon, an unsaturated aliphatic hydrocarbon, an oxygenated hydrocarbon, an alcohol, and/or an aromatic hydrocarbon.

71. (New) A process for producing single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material;

treating the catalytic particles with a reduction process;

heating the catalytic particles to a reaction temperature; and

catalytically forming single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the single-walled carbon nanotubes thereby forming reacted catalytic particles bearing the single-walled carbon nanotubes, and wherein the carbon-containing gas comprises carbon monoxide, a saturated aliphatic

hydrocarbon, an unsaturated aliphatic hydrocarbon, an oxygenated hydrocarbon, an alcohol, and/or an aromatic hydrocarbon.

72. (New) A process for producing single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material;

heating the catalytic particles to a reaction temperature by exposing the catalytic particles to a heated inert gas; and

catalytically forming single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the single-walled carbon nanotubes thereby forming reacted catalytic particles bearing the single-walled carbon nanotubes, and wherein the carbon-containing gas comprises carbon monoxide, a saturated aliphatic hydrocarbon, an unsaturated aliphatic hydrocarbon, an oxygenated hydrocarbon, an alcohol, and/or an aromatic hydrocarbon.

73. (New) A process for producing single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material;

heating the catalytic particles to a reaction temperature; and

catalytically forming single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the single-walled carbon nanotubes thereby forming reacted catalytic particles bearing the single-walled carbon nanotubes, and wherein the carbon-containing gas comprises carbon monoxide, a saturated aliphatic hydrocarbon, an unsaturated aliphatic hydrocarbon, an oxygenated hydrocarbon, an alcohol and/or an aromatic hydrocarbon, and flushing the carbon-containing gas from the reacted catalytic particles.

74. (New) A process for producing single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material;

heating the catalytic particles to a reaction temperature;

catalytically forming single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the single-walled carbon nanotubes thereby forming reacted catalytic particles bearing the single-walled carbon nanotubes, and wherein the carbon-containing gas comprises carbon monoxide, a saturated aliphatic hydrocarbon, an unsaturated aliphatic hydrocarbon, an oxygenated hydrocarbon, an alcohol, and/or an aromatic hydrocarbon; and

removing amorphous carbon from the reacted catalytic particles and treating the reacted catalytic particles to obtain the single-walled carbon nanotubes.

75. (New) A process for producing single-walled carbon nanotubes, comprising:



disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material;

heating the catalytic particles to a reaction temperature; and

catalytically forming single-walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas for a duration of time and at a temperature sufficient to cause catalytic production of the single-walled carbon nanotubes thereby forming reacted catalytic particles bearing the single-walled carbon nanotubes, and wherein the carbon-containing gas comprises carbon monoxide, a saturated aliphatic hydrocarbon, an unsaturated aliphatic hydrocarbon, an oxygenated hydrocarbon, an alcohol, and/or an aromatic hydrocarbon and wherein the carbon-containing gas further comprises a diluent gas.

76. (New) A process for producing single-walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalytic material;

heating the catalytic particles to a reaction temperature;  
catalytically forming single-walled carbon nanotubes by exposing  
the catalytic particles to a carbon-containing gas for a  
duration of time and at a temperature sufficient to cause  
catalytic production of the single-walled carbon nanotubes  
thereby forming reacted catalytic particles bearing the single-  
walled carbon nanotubes, and wherein the carbon-containing  
gas comprises carbon monoxide, a saturated aliphatic  
hydrocarbon, an unsaturated aliphatic hydrocarbon, an  
oxygenated hydrocarbon, an alcohol, and/or an aromatic  
hydrocarbon; and  
treating the reacted catalytic particles to obtain the single-walled  
carbon nanotubes.